THE BULLETIN

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Hydro-Electric Power Commission of Ontario

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NOVEMBER-DECEMBER, 1921

Progress in Rural Work

AN article was published in the August, 1920, issue of THE BULLETIN describing in a general way, the advantages to be derived from the use of Hydro on the farm. The policy of the Commission with regard to rural distribution was discussed in detail, and a summary of the procedure necessary to obtain service in any rural district was outlined.

Since that time important legislation has been passed by the Provincial Government authorizing a bonus to the extent of 50 per cent of the capital cost of the primary lines, such bonus to be paid from the Provincial Treasury. This step entailed a complete revision of rates, as it meant a very appreciable saving to the individual consumer in the way of reduced carrying charges on the line. These new rates, together with a general outline of the revised policy, were sent out early in the year to all townships from which petitions had previously been received. These met with an immediate response in the form of requests from the various townships, that representatives be sent to address the ratepayers and discuss in detail the question of rural distribution. The first meeting was held in the Dundas District on June 16th, followed during the summer by meetings in over one hundred townships throughout the province.

A brief summary of the work done in the various Hydro systems is given below :—

NIAGARA SYSTEM

Consequent to the passing of "The Rural Distribution Act, 1921", the area covered by the Niagara System was divided into districts, the centres of which are, for the most part, the transformer station in Hydro municipalities. In very few cases will it be necessary to construct new stations because of the nearness of stations now in operation. Already 43 Rural Power Districts have been approved, and other districts will be estblished as soon as sufficient contracts are obtained to make it possible to more definitely locate their boundaries.

In order to explain the method of supplying power from these centres of distribution, the various classes of service, rates, benefits and contracts, a total of 155 meetings were held throughout the Niagara System. Signed applications for service were obtained at these meetings, and committees formed to carry on the work of obtaining as many more as possible. Usually the members of these committees represented the different concessions, so that the most complete canvass was assured. To date over 3,000 contracts have been obtained. These contracts will make possible the construction of 261 miles of rural lines. Of this milage 82 miles of overhead, and 76 miles of underground have

been approved and construction is now in progress. The other 103 miles will be put forward for approval and construction as soon as the final details can be arranged.

Central Ontario System

Requests for information have been received from the townships listed below, and meetings have been held in each case. Committees were appointed for the purpose of canvassing prospective users of service, and these committees are now at work:

Darlington Township, Hope Township, Hamilton Township, Sidney Township, Thurlow Township, Tyendinaga Township. Richmond Township, Camden Township, Portland Township, Loughborough Township, S., Monghan Township, Cavan Township, Manvers Township, Ops Township.

Very few of the farms in the counties of Bruce, Grey, and Dufferin, comprising the greater part of the district served by the Eugenia Development, have been equipped for using electrical energy either for lighting or power, due, principally to the fact that Hydro service in this section of the Province has not been available until within the last two or three years and most of the effort of the Commission in this district has been directed towards submitting information concerning the cost and advantages of farm service. Following up the public meetings held at various times during previous years at which the benefits of electrically equipped farms were thoroughly explained, complete surveys were made in a large number of townships to determine the possible demands and to secure detailed information covering general service to these township on a large scale. The results of these surveys proved that, although petitions had been received from a few isolated groups of farmers in various sections of the district, the equipping of farms for electrical operation had never had been seriously considered by the majority interviewed.

During the past summer season (1921), however, a great deal of active work has been going on in the Eugenia District to thoroughly educate the farmers as to the advantages to be gained by the use of both light and power.

Public meetings were held in twelve different townships. Local Committees were organized in each township to canvass individual prospective customers and contracts were executed between the Commission and Kinloss, Brant and Artemesia Townships covering service to farm and hamlet customers in each. Before the end of the present year five farms and about twenty hamlet customers will be receiving service in these three townships. In the spring of next year (1922) arrangements will be completed for serving customers in Howick Township, Bruce County, in which district 46 farm and 58 hamlet contracts have already been signed. This may seem to be meagre results for a season's work, but the seed has been sown on fertile ground and the indications are that the Commission's efforts will produce much greater results in the next year

when it is expected that several township systems will be organized and constructed.

Severn System

Although parts of the Severn System district which comprises the whole of Simcoe County, have been receiving Hydro service for the last seven or eight years, it is only recently that any real activity has been manifested by the farmers toward the use of electric power or lights. Prior to the year 1920 various isolated groups had submitted petitions and public meetings had been held in a few localities in which a more progressive spirit prevailed, but in spite of every effort put forth by the Commission to give the rural communities as well as the towns and villages the benefits of the use of electrical energy, not one single farm customer was secured outside of an incorporated town or village.

During the year 1920 very extensive surveys were carried on by the Commission to secure information as to the demands and costs of serving large groups of farms in township systems or units, six separate and distinct townships were investigated and information tabulated covering service to approximately 3,000 farms. These surveys were followed up during the summer season of 1921 by public meetings; local organizations were arranged for in various townships to carry on a canvass for securing customers. A contract was executed between the Commission and Nottawasaga Township and seven miles of rural line are now under construction, which, when completed will give service to 23 farm and 34 hamlet customers between the Town of Collingwood and the Hamlet of Duntroon. In all probability, during the coming year, systems will be constructed in Innisfil and Oro Townships located within the boundaries of which are a large number of summer cottages scattered along the shores of Lake Simcoe, and as efforts were also made by the Commission to interest the farmers in Gwillimbury, Tecumseh, Essa, Flos, Tiny and Tay Townships it is expected that the coming year will show the results of the Commission's activities in these townships in the nature of service to at least some of the rural communities located in each. Considerable activity was manifested, especially by the summer residents in the vicintiy of Wasaga Beach, Sunnidale Township to secure electric service and public meetings were held and a large number of farmers were interviewed for the purpose of securing farm as well as cottage contracts. Approximately fifty cottage contracts were secured and estimates are now being prepared covering the cost of constructing a distribution system for rural residents in this district.

Wasdell's System

The farmers in this district seem to have been more progressive and seem to have appreciated the advantages of the use of electric lighting and power, more so than in any other section of the Province outside of the Niagara District. At the present time 33 rural customers are being served in the vicinity of Sunderland, Woodville, and Beaverton in Brock, Thorah and El-

don Townships, including 14 hamlet customers in Lorneville and Gamebridge and 19 farms.

Great activity has been manifested by the Townships of Scott, Reach, Brock, Eldon and Mariposa for electric service. Extensive surveys were conducted in these townships during the year 1920 covering service to approximately 3,500 farms, and followed up by public meetings during the summer season of 1921. Local Committees were organized to carry on a canvass for the purpose of securing farm contacts, a large number of which have already been secured in addition to those already receiving service. The indications are that during the next year all of these townships will be served with rural lines. The Townships Morrison and North Orillia have been endeavoring to arrange for Hydro-Electric service in the vicinty of the Hamlets of Washago and Severn Bridge to be served from a line direct from the Wasdell's Power House. Complete information has been submitted to the various petitioners in these two localities but up to the present time no arrangements have been completed for constructing lines.

St. Lawrence System

Up to the present time 10 rural power districts have been established in the eastern part of the Province, which will be served by the St. Lawrence System. A number of these have not been active, but rates have have been supplied to the townships which form a part of these districts, in answer to petitions received. Some of these districts are expected to develop; in others there is construction actually under way, or preparation is being made to start construction in the near future.

Out of Brockville there are two extensions on which there is anticipated considerable growth of business. An extension in this district is now being approved. Lines in this district have been in operation for approximately 18 months, revenue having been collected for this period under new rates and on the new basis.

In the vicinity of Prescott there has been in contemplation the extension of a line northward, in the Townships of Augusta and Edwardsburg. The extension is mainly with a view to getting to the village of Spencerville. This work has been approved, and actual construction will be commenced in a short time. It is possible, however, that this work will be deferred until the Spring owing to the winter weather conditions. A portion of the work may, however, be undertaken this Fall. Material for this extension is already on the ground. The Township Augusta finally decided to withdraw the applications of the farmers, but the extension will proceed regardless of this.

In the vicinity of Williamsburg, plans were under way in the Spring of the year, to proceed with the construction of lines out of the village north and westward, and it was contemplated to include service to the Village of Winchester Springs. Owing to the farmers in this district, however, finally deciding to request the

withdrawal of their application, the Township Council asked that no further work be done in this district.

Out of the Village of Chesterville, a short extension was made in the Spring of this year, and an application is now being made to extend this, and approximately 4 miles of primary line will be constructed in this district, and includes service to 12 or 14 farmers.

On the line between Martintown and Lancaster, which was placed in service this spring, a rural district has been created, and over 20 customers are now being connected up in and adjoining the Hamlet of Williamstown.

In addition to the above, rural meetings have been held in many of the other districts, and applications left with committees for the purpose of carrying on a canvass.

Ottawa System

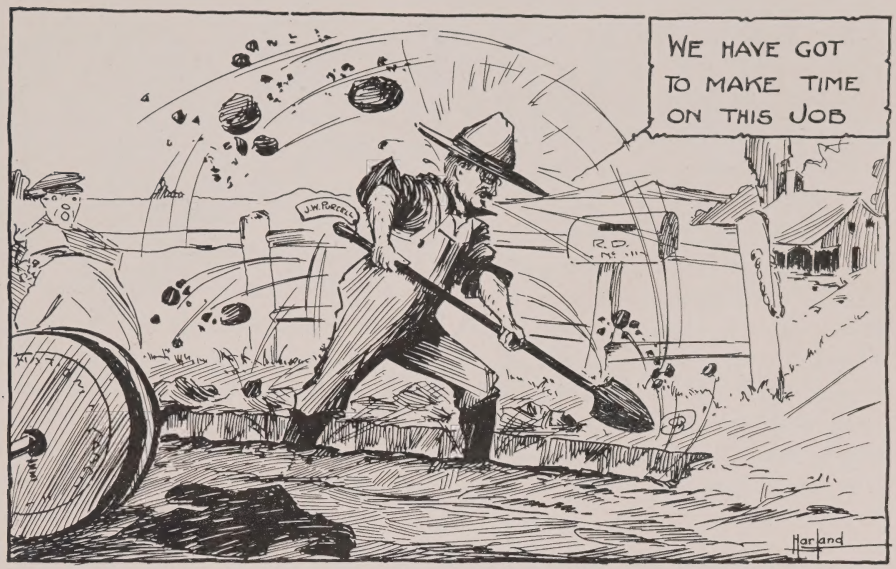
The chief activity in this System has been in the vicinity of Ottawa, by the Township of Nepean. This township has been urging the development of Hydro-Electric lines for over a year, and there has been considerable enthusiasm shown by the local officials, with the result that it was the first township to undertake construction work where bonusing of lines became effective. There are now over 70 customers receiving service, on approximately 18 miles of primary line. Construction work is still in progress in this township. It is expected that these lines will extend rapidly. In fact, it is contemplated that it will be ultimately possible to reach the Village of Richmond. Over 100 contracts have been received, a number of which cannot be served as yet, owing to there being insufficient customers per mile, to reach all the farmers.

There has also been a desire on the part of parties in Gloucester Township, on the east side of Ottawa, to receive Hydro service, and estimates are now being prepared, to determine the feasibility of serving this section. It is realized that there is considerable difficulty in finding a satisfactory route to extend lines out of the City of Ottawa.

The following summary shows in detail the progress of rural work during the year:

Rural Power District	Miles of Overhead Approved	Miles of Underground Approved
Chatham	17	-
Cannington	1¼	-
Chippawa	-	8½
Dorchester	26	-
Dundas	3	3½
Flesherton	1¼	-
Galt	3	-
Lynden	-	5½
Martintown	¼	-
Nottawasaga	17¾	-
Nepean	18½	-
Niagara	-	3½
Prescott	15	-
Ridgetown	18	-
Saltfleet	15	55
Walkerton Quarry	1½	-
Wroxeter	6	-
	143½	76

Total Meetings held—289
Total Contracts obtained—3503



O. H. E. CLUB DANCE

The Ontario Hydro-Electric Club held its first dance of the season at the Pavlowa Academy on Monday, December 5th, 1921. The previous high standard provided at last year's dances was amply maintained and it was the opinion of those present that this dance was the best ever held.

There were about four hundred present to enjoy the excellent music provided by the Pavlowa Orchestra under the personal direction of Mr. Cornfield. During the intermission some novelties were introduced in the form of fancy dancing. Mr. S. Titchener Smith, one of Toronto's noted dancing masters, gave an exhibition waltz and fox-trot with his assistant Mrs. Roberts, which made a hit with the audience on account of the wonderful technique and charm with which it was rendered. Misses Jean Russell and Hilda Leonard, two young pupils of Mr. Smith also gave costume dances in an Irish Jig, Highland Fling, Sailors Hornpipe and Soft Shoe Dance. The last mentioned was a very clever exhibition by Miss Russell who although only eight years old is becoming quite well known and in fact has been booked for a year's contract with the Trans-Canada Theatres, Limited.

Another innovation was a novelty fox-trot where all the dancers were presented with colored paper caps of every shape and description. The ladies' hats were all numbered, four lucky numbers were drawn and the ladies holding these numbers were each given a box of chocolates.

The patronesses for the occasion were Mrs. F. A. Gaby, Mrs. W. W. Pope, Mrs. E. T. J. Brandon, Mrs. M V. Sauer and Mrs. A. V. Trimble.

The Chief Engineer, Mr. F. A. Gaby, was present and took an active

part in the evening's entertainment together with Mr. W. W. Pope, the Secretary.

During the intermission, Mr. M. V. Sauer very kindly volunteered to play a couple of extras which were greatly appreciated.

The Committee in charge were: Mr. J. P. Morgan, chairman; Miss R. McQuire, vice-chairman; Miss E. Hammond, Miss E. Anderson, Mr. G. O. Floyd, Mr. G. O. Vogan, Mr. B. N. Simpson and Mr. M. C. Hare. Financially also, the dance was a success, and a small surplus will be turned over to the Club.

ASSOCIATION OF MUNICIPAL ELECTRICAL UTILITIES.

Election of officers for year 1922, and other Convention matters.

The results of the Primary Ballot for the nominations of candidates for officers for the year 1922 were published in the preceding number of THE BULLETIN. Some of the nominees have withdrawn their names. The Election Ballot will therefore contain the following:—

President—R. H. Martindale, M. J. McHenry.

Vice-President—A. T. Hicks, O. M. Perry.

Secretary—S. R. A. Clement.

Treasurer—G. J. Mickler.

Directors at Large—E. V. Buchanan, H. H. Couzens, J. G. Jackson, V. S. McIntyre, O. H. Scott, R. H. Starr, P. B. Yates.

DISTRICT DIRECTORS

Niagara District—J. G. Archibald, John J. Heeg.

Central District—F. C. Adsett, W. E. Reesor, C. A. Walters.

Georgian Bay District—J. R. McLinden, E. J. Stapleton.

Eastern District—H. F. Shearer.

Northern District—R. H. Staford.

The election ballots will be handed to the various utility delegates at the time of registration at the January Convention. They will be deposited at the beginning of the first session, on the afternoon of January 26. The scrutineers will then proceed to count the ballots and will announce the results of the election before adjournment for the Convention dinner.

The Minutes of the meeting of the Executive Committee show as one item of the Convention programme, a paper by Mr. A. V. White, on "The Development of the St. Lawrence River." Mr. White has advised the Secretary that owing to the amount of work he has on hand, he is unable to undertake the work at this time. The Papers Committee, when advised of this fact, suggested that Mr. T. C. James give an illustrated talk on "The Nipigon Development."

The Convention will be held in room C26, Chemistry and Mining Building, University of Toronto (College Street, at McCaul).

The Convention dinner will be served by Bingham's, 84 Yonge St. (just north of King St.).

Bananas are said to be a good brain food.

Technical Section

Meter and Instrument Repair Service of the Laboratories

By Perry A. Borden

SINCE their organization in 1912 the Laboratories of the Hydro-Electric Power Commission have undertaken to maintain a repair service on meters and metering devices for the benefit of the Commission's customers and others who might care to take advantage of these facilities. This work was started in a small way in a part of Toronto Station before the Laboratory Building was erected, and has continued upon an increasing scale, until at present many thousands of dollars' worth of meters and instruments pass through the shops in the course of a year.

The largest part of the work is that done upon watthour meters taken from service either because of damage or of changed conditions. These may be classified as follows: (a) Meters damaged in service and repaired for return to original owners. (b) Meters adjusted and prepared for reinspection, irrespective of their original condition. (c) Meters taken off systems where the frequency has been changed, for transfer to the Commission's Stores. In addition to these, there are, of course, those meters sent in from stock or from the factory to be tested by the Government Inspector before being placed in service; but as these form a very small percentage of the total handled, and as the Laboratory does little work upon them, merely preparing them for test and looking after the opening up and repacking, they will be given no further treatment in these paragraphs.

Upon receipt of a shipment of meters at the Laboratories, these are carefully unpacked, a record being made of their ratings, serial numbers and all particulars in regard to their condition, this information being entered upon a card and permanently filed as a part of the Laboratory records. The meters

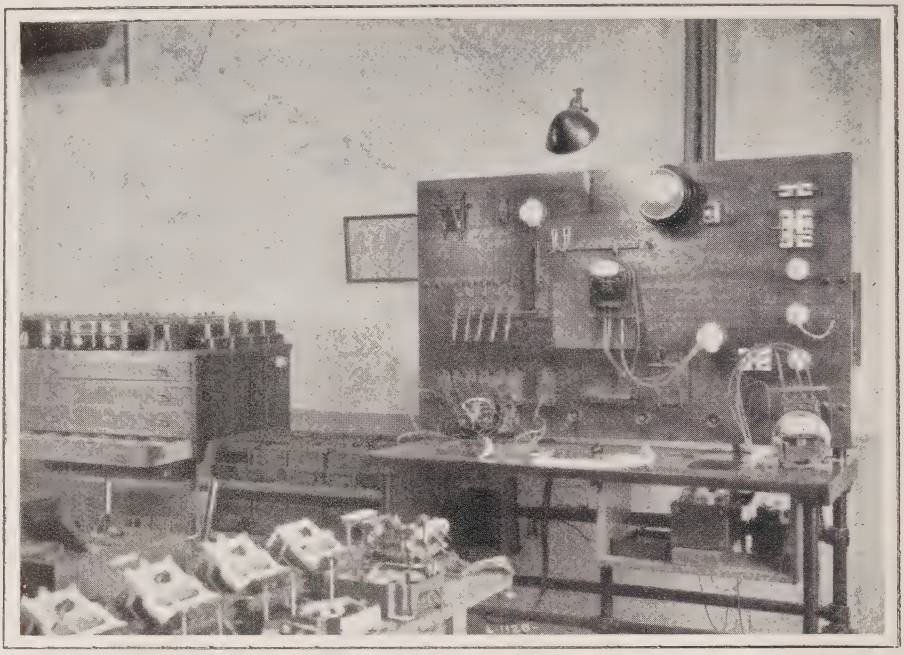


Figure 1. Meter Test Bench.

are then taken into the shop and each one dismantled and thoroughly cleaned. At this time any further defects or troubles which may make their appearance are noted on the cards. After cleaning, the actual overhauling of the meter is proceeded with. Parts which, though damaged, may be efficiently used again are repaired and put into good shape. Thus, open-circuited voltage coils, if the trouble is exterior to the winding can be mended and the expense of a new coil avoided. Grounded and short circuited current coils can usually be re-insulated and made as good as new. Bent discs may be straightened, and jamming or mal-alignment of gears can generally be rectified. After the parts which can be used over again are eliminated, the remaining parts are drawn from stock. The Meter Department carries a complete supply of the more commonly required parts of all the makes and types of watthour meters usually found on the System, and replenishes these from time to time from the manufacturers.

Under ordinary operating conditions practically the only parts of a meter upon which there is any appreciable degree of depreciation are the jewels and pivots; and to these particular attention is given when repairs are made. Each jewel is examined under a microscope, and if the slightest flaw appears, it is discarded to be replaced by a new one. As in practically every case where the jewel is at fault it is necessary to replace the pivot also, a very complete stock of these parts in a large variety of makes, types and

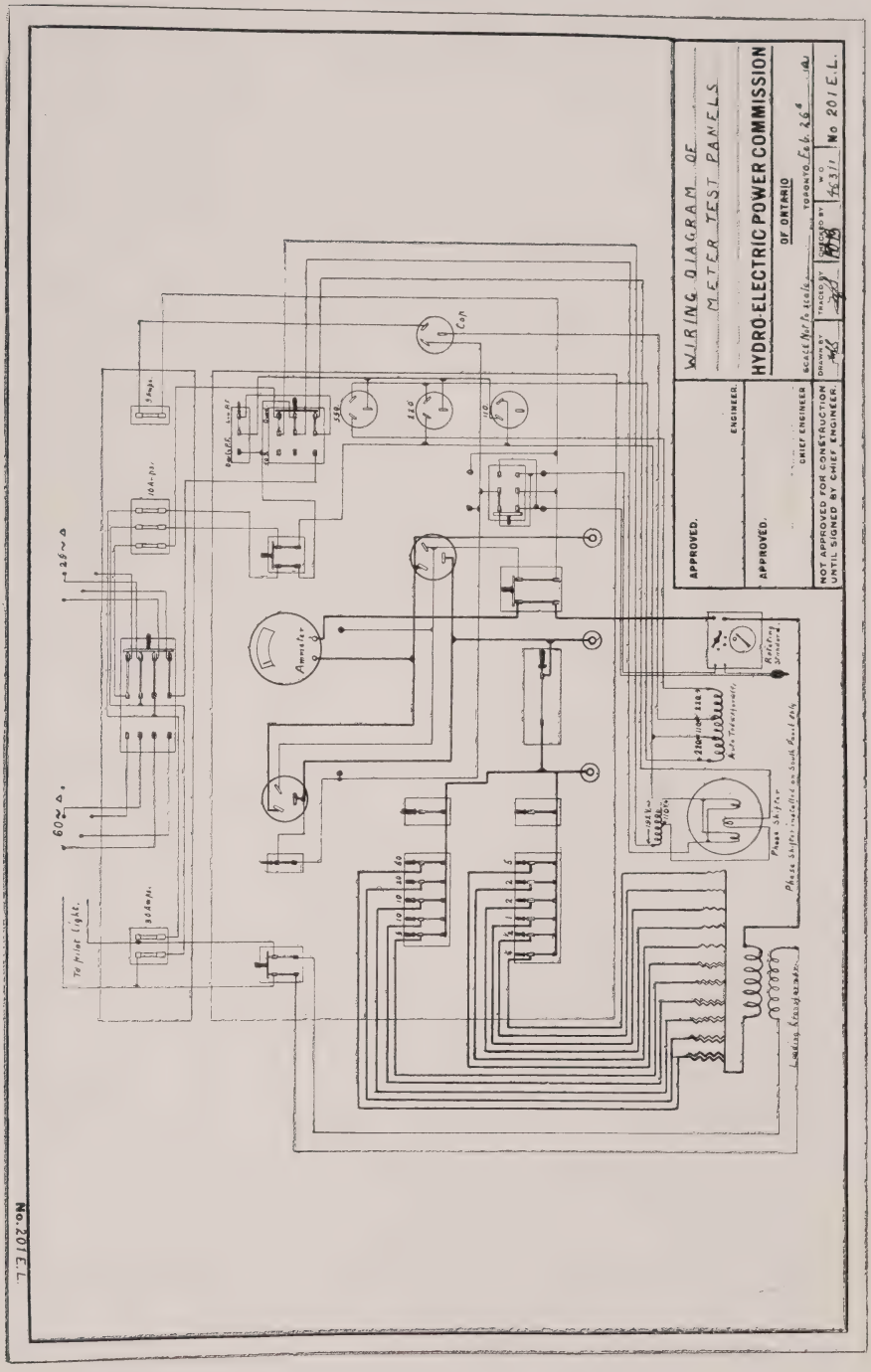


Figure 2. Wiring of Meter Test Bench

styles is carried. The bearing at the top of the meter shaft is a part that requires particular attention. Although it does not carry the weight of the moving part, it is sometimes exposed to considerable side thrust which will introduce unexpected friction. If the pivot is set slightly askew, or a gumminess due to the residue of previous attempts at lubrication is present, much trouble from friction may be expected; and great care must be taken to avoid these faults. When the meter is finally assembled it is placed on the test board and given a final inspection for visible sources of friction, clearances and alignment of parts, after which the load is applied for test.

The test benches are specially equipped for testing a large variety of meters, and are so fitted that practically any modern make or type of instrument can be almost instantly connected into circuit. The wiring of the test benches is particularly interesting in its flexibility. Connections can be arranged for 110, 220 or 550 volts, either 25 or 60 cycles by shifting a plug on the front of the board, while by the throw of a switch, meters can instantly be tested at fifty percent power factor or at exact quadrature on any of these voltages. Currents for loading the meter are obtained from a small transformer giving 11 volts on its secondary side, fed from the same source of supply as are the voltages. By means of a series of resistors and switches, it is possible to obtain any current from ½ to 100 amperes from this transformer, and pass it through the current coils of the meter. The loading switches are arranged in two rows, the current controlled by each switch in the upper row being just ten times that of the switch immediately below it. Thus it is possible to set up any desired load for the meter under test, and take runs with this value of current or with one-tenth load, merely by the choice of the master switches which control the two sets of resistors. The current and voltage are led to a standard instrument located in a compartment beneath the table top, the dial being visible through a plate glass window. The permanent circuits of the bench are not led directly to the meter under test but to a three-pole outlet arranged to receive a polarized plug. Several of these plugs are fitted up with different types of terminals, so that it is possible to accommodate the board to a variety of meters without any change in the permanent equipment. For ordinary two wire meters having the standard arrangement of terminals, there is provided a spring connector carrying three long pins which are inserted into the meter terminals. By hooking a strap about the body of the meter, the terminal block is retained in place, and the meter is completely connected into the testing circuits without the necessity of tightening screws or "juggling" with wires. With polyphase meters, the spring attachment is not practicable because of the variety of terminals met with; and for these, a plain three terminal cord is furnished, the respective leads being identified by their colors.

The meter under test being found in satisfactory conditions mechanically it is given a run in comparison with the standard instrument and the speeds

of the rotating elements compared. Then by adjustment the speed of the meter is brought into agreement with the standard, to a degree of accuracy higher than that required by the Government inspectors. The gear ratio of the dial train is then checked, after which a label is placed on the back of the meter giving its accuracy at the time of test, and the initial of the tester. The meter is then ready for service, and is turned over to the Storehouse for shipment or for stock.

Meters taken in from systems where the frequency is being changed are completely overhauled and made into saleable stock. Many of these as received are adjusted for 133 or 125 cycle operation. These are first changed to the standard 60 cycle rating, it seldom being practicable to change them to 25 cycles. Of late much work has been in re-rating meters from one current to another. During the past few years there had accumulated in Stores a large number of 5 ampere two-wire meters for which the demand was rapidly becoming less; and these promised to become dead stock. It has been found quite practicable to equip these with 10 ampere coils and readjust them, when they can be at once shipped out on waiting orders. In a similar way a number of meters of "freak" rating, for which there would probably never arise a demand have been re-constructed and returned to service.

With the large equipment of indicating voltmeters, ammeters and other instruments which the laboratory carries, it is necessary that there be a very complete provision for keeping these in good repair

Figure 3.

and accurate adjustment. The facilities provided for this purpose are of course not in constant demand; and it has been found practicable to place them at the disposal of the users of instruments in general, and to undertake the repair and adjustment of electrical testing equipment for the municipalities and for any other parties who may be disposed to patronize the service. It is not, of course, possible to carry a complete stock of spare parts for the immense variety of instruments which are in use throughout the province, or even to get this work down to a quantity basis. As a result, work of this class is proportionately more expensive than that on watthour meters; but outside parties are able to have this service rendered at the same expense as to other departments of the Commission. In some cases the instrument cannot be economically repaired outside the factory, in which case the Laboratories will undertake to forward it to the manufacturer, or to return it as received, to the owner. Most of the work of this class has been done on ammeters, voltmeters, wattmeters and meggers, though there is a considerable number of special metering devices such as graphic meters, demand indicators, bond testers, and speed indicators continually passing through the instrument shop.

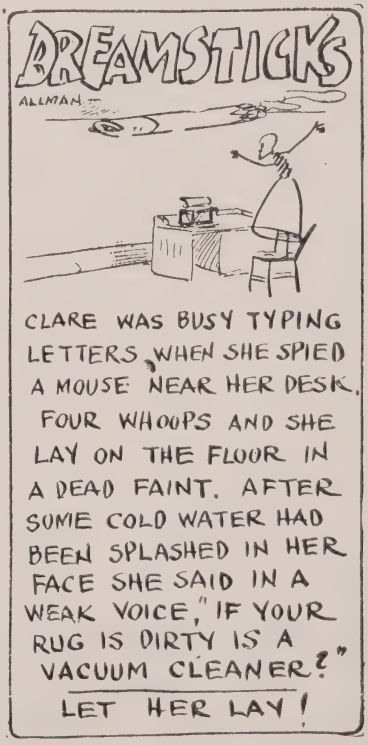
The procedure in handling indicating instruments is very similar to that followed in the work on watthour meters, except that routine methods are seldom applicable. Each instrument usually presents an individual case which must be handled on its own merits; and many adjustments cannot be made until it is actually on test. Any outstanding defects or injuries are rectified in the instrument shop, and the instrument generally tested as to its working condition. It is then taken to the Standards Room, where it is placed in circuit with standard instruments and a check made of its accuracy. If the error falls outside certain limits, depending upon the type of apparatus and the conditions under which it is to be used, it is adjusted until the accuracy is satisfactory. As it is practically impossible to produce an instrument which is absolutely perfect in its scale, the meter is then checked, and a record made of the accuracy as it leaves the Standard. This record is then made up in a graphic form on transparent paper and blueprinted, one or more copies of this print accompanying the report, and the original being filed with the Laboratory records.

A few notes in conclusion for the benefit of those who may wish to take advantage of these services of the Laboratory may be of interest. On many occasions watthour meters have been received in the Laboratory in a badly damaged condition due to poor packing for shipment. All instruments and meters have delicately jewelled bearings, and these must be protected from abuse. In some cases the jewels are protected by resilient springs; but this does not justify one in inviting damage by rough handling. Metering devices, when shipped, should always be carefully packed. This does not mean wedging the meter into a shipping case and then covering with excelsior or straw, nor does it mean packing a number of meters in close contact. Most damage is done

by sudden jars and hammer blows and if these can be converted into easy movements, the instrument should travel in safety. The first precaution consists in having the meter wrapped in paper or in some other way protected from dust which may sift into the movement. The meter, well wrapped, should then be placed in the shipping case on a bed of resilient material several inches thick, and this packed firmly but not hard. If there are several meters in the case, care should be observed to see that they cannot come in contract with each other so as to transmit jarring effects. If two instruments or meters are in contact, it is better that they be firmly tied or strapped so that they cannot hammer upon one another while in transit. As it is improbable that the transportation company will make any particular effort to keep the shipment top side up, the instruments within the case should be as carefully padded on the sides and top as below, so that no amount of rough handling can jar the mechanism or injure the jewels. The top of the box should then be fastened on, preferably with screws, and shipment made to the Hydro-Electric Laboratories, Strachan Avenue, Toronto, attention of the Meter Department. At the same time, a letter should be sent by post, giving full details as to the nature of the work desired, together with shipping instructions for return. Municipalities or others having a regular account with the Commission should communicate with the Head Office, 190 University Avenue, Toronto, attention of the engineer in charge of their district, so that the proper work order number may be applied; while others may carry on their correspondence directly with the Laboratories. In any case the work will be done as promptly as possible; but an observance of these suggestions will go far toward facilitating dispatch in the work, and in assisting the Laboratories to maintain a satisfactory service to the user of the apparatus.

A tank which will travel under water as well as on land is suggested by a French General.

Arab women churn butter by suspending a large sheepskin receptacle full of cream from a tripod, then jerking the back to and fro.



HYDRO NEWS ITEMS

Ottawa System

NEPEAN TOWNSHIP—Construction work is in progress on rural lines west of the City of Ottawa. Over seventy-five rural customers are being connected up, and eighteen miles of primary line will be constructed to serve these. Power will be supplied by the Ottawa Hydro-Electric System.

Central Ontario System

NORWOOD—A wiring campaign in Norwood has resulted in thirty-five new lighting customers and two power customers being taken on.

HAMILTON TOWNSHIP—As a result of meetings held in November an active canvass is being made in Hamilton township for farm service.

OPS TOWNSHIP—An active canvass is going on with a view to extending lines West of Lindsay in Ops and Mariposa Townships.

Rideau System

LANARK—This municipality is now receiving power from the Rideau System. Lanark is now having its first experience with electric power and light, and the citizens are taking considerable satisfaction out of the service. Over one hundred customers have been obtained, and the municipal officials are well pleased with arrangements made by the Commission to supply them. Power was first delivered on September 30th.

St. Lawrence System

ALEXANDRIA — Additional motors are being installed at the Saw Mill and Wood Working plant of Mr. C. Lacombe. The 60-h.p. motor will in the future operate only the circular saw, and a 30-h.p. and a 5-h.p. motor are being installed to operate the broom handle machinery. This will make a connected load of 95 h.p. for this service.

CHESTERVILLE—The Maple Leaf Condensed Milk Company proposes to install an additional motor of about 100 h.p. connected load during this winter.

AULTSVILLE—This police village has passed both the enabling and money by-laws and a committee has

been approved to obtain contracts from consumers in the village. It is proposed to supply this village from a station to be erected in Osnabruck Township, which would also supply Farran's Point and the surrounding rural district.

WILLIAMSTOWN—A distribution system to supply lighting to twenty two Hamlet users and one Class 4 rural contract, will be constructed during the month of December.

CASSELMAN—A committee is to be appointed to canvass for contracts from the residents of this village.

Eugenia System

GENERAL—The demands from the towns served by the Eugenia Development have been increasing very rapidly during the past year and in the month of October approximately 6,000 horse power was sold to the various towns and villages connected to the system. This demand has become such that the development is incapable of supplying additional power unless further extensions are made. The Commission is investigating at the present time the possibility of connecting the Eugenia System to the Niagara System by means of a transmission line between Harriston and Mount Forest, with a frequency changing station at Durham. Should the results of this investigation prove satisfactory in all probability in the coming year a 2,500 K.V.A. frequency the power needed for the Eugenia System will be supplied from Niagara. This scheme seems to be more economical than the development of other water power plants in the district.

HANOVER—The Municipality of Hanover is preparing to submit a money by-law to the ratepayers at the coming January elections for $14,000-.00 to cover improvements and extensions to the local Hydro-Electric System.

The load in this municipality has been increasing steadily and additional capital is required to provide for additional plant to take care of the increased demand for service.

The local Hydro-Electric System has just completed the installation of a 300 K.V.A. condenser for the purpose of improving the power factor of the system. An extension to the sub-station is being constructed, included in which are a number of outdoor type non-automatic oil switches for taking care of two incoming lines and two outgoing lines on the Eugenia System, Hanover being the junction point and distributing centre for the western end of the Eugenia System.

OWEN SOUND—Estimates are being prepared covering the delivery of an additional 2,000 horse power for this muicipality to supply electrical energy to a new industry. When this load is secured the total demand of the municipality will be approximately 3,500 horse power.

Severn System

Oro Township—A large number of public meetings have been held in this township to arrange for farm service and great activity is being manifested by the summer cottage residents in the vicinity of Shanty Bay. It is proposed to serve this district by an extension of the primary lines of the Barrie Hydro-Electric System.

Meaford—The Municipality of Meaford proposes to submit an enabling by-law to the ratepayers at the coming January elections covering Hydro-Electric service. This municipality is the only town in Grey County not being supplied at the present time with Hydro-Electric power.

Wasdell's System

General—The loads on this system have been increasing steadily during the past year and most of the surplus power generated at the development and not required for the system municipalities has been sold to the Severn System. The indications at the present time are that this system will show excellent results for the past fiscal year of the Commission, which ended October 31, 1921. From now on the system in general and all of the municipalities will be in first class condition from a general standpoint.

Mariposa Township—Great activity has been manifested by various groups of farms and hamlets in this township in connection with Hydro-Electric service and a large number of public meetings have been held to explain rates, costs, and give general information. This township, when served with Hydro-Electric power, will secure energy through an extension of the lines from Cannington substation.

Port Perry—Arrangements have been practically completed for serving the Village of Port Perry by an extension of the Wasdell's System lines from Cannington and Sunderland. The Village of Port Perry will be served from the same station at Greenbank which serves the Town of Uxbridge.

Uxbridge — Arrangements have been practically completed for extending the Wasdell's System lines so as to serve the municipality of Uxbridge. The 22,000 volt line will be extended from Cannington with a step-down station at Greenbank, from which point it is proposed to construct a 4,000 volt line to the Town of Uxbridge.

NOTICE

TO ELECTRICAL MANUFACTURERS, JOBBERS AND DEALERS

Electrical material, devices and fittings for use on inside electrical installations in the Province of Ontario, *must not be offered for sale* until their design and construction has been approved by the Hydro-Electric Power Commission of Ontario. (6 Geo. V., Chapter 19, 1916)

Manufacturers whose products are approved and listed by other recognized authorities, and which also meet the requirements of this Commission, may have same placed on the approval list by making application in accordance with Approval Laboratories' Bulletin No. 5, a copy of which will be sent upon request.

ONTARIO DEALERS' ATTENTION IS CALLED TO THE FOREGOING REGULATION—WHICH PROHIBITS THE SALE OF UNAPPROVED ELECTRICAL DEVICES.

APPROVAL LABORATORIES

HYDRO-ELECTRIC POWER COMMISSION
OF ONTARIO

8 STRACHAN AVENUE, TORONTO, ONTARIO

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VOLUME VIII.

THE BULLETIN

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HYDRO MUNICIPALITIES

NIAGARA SYSTEM

	Pop.
Acton	1,563
Ailsa Craig	486
Ancaster	400
Ancaster Twp.	4,058
Aylmer	2,247
Ayr	802
Baden	710
Barton Twp.	6,382
Beachville	503
Biddulph Twp.	1,623
Blenheim	1,490
Bolton	587
Bothwell	680
Brampton	4,270
Brantford	32,159
Brantford Twp.	6,741
Breslau	500
Brigden	400
Burford	700
Burford Twp.	3,778
Burgessville	300
Caledonia	1,265
Chatham	15,182
Chippawa	1,172
Clinton	1,809
Comber	800
Copetown	230
Dashwood	350
Delaware	350
Dereham Twp.	3,200
Dorcester	400
Dorchester S. Twp.	1,376
Drayton	600
Dresden	1,411
Drumbo	375
Dublin	218
Dundas	5,009
Dunnville	3,517
Dutton	860
Elmira	2,392
Elora	1,205
Embro	437
Etobicoke Twp.	7,281
Exeter	1,445
Fergus	1,710
Flamboro E. Twp.	2,499
Forest	1,422
Galt	12,434
Georgetown	2,121
Glencoe	824
Goderich	4,220
Grantham Twp.	3,456
Granton	300
Guelph	17,032
Hagersville	1,072
Hamilton	114,766
Harriston	1,340
Hensall	721
Hespeler	3,000
Highgate	371
Ingersoll	5,385
Kitchener	21,056
Lambeth	350
Listowel	2,551
London	59,100
London Twp.	6,073
Louth Twp.	2,312
Lucan	620
Lynden	622
Markham	836
Merritton	2,553
Milton	1,800
Milverton	1,044
Mimico	2,887
Mitchell	1,656
Moorefield	335
Mount Brydges	500
New Hamburg	1,370
New Toronto	2,696
Niagara Falls	14,207
Niagara-on-the-Lake	1,918
Norwich	1,271
Norwich N. Twp.	1,879
Norwich S. Twp.	1,888
Oil Springs	473
Otterville	400
Palmertson	1,890
Paris	4,320
Parkhill	1,213
Petrolia	2,863
Plattsville	500
Point Edward	1,037
Port Colborne	3,235
Port Credit	878
Port Dalhousie	1,447
Port Stanley	717
Preston	5,184
Princeton	600
Ridgetown	2,150
Rockwood	520
Rodney	686
Sandwich	3,643
Sarnia	12,649
Scarborough Twp.	7,843
Seaforth	2,015
Simcoe	3,756
Springfield	420
St. Catharines	19,195
St. George	600
St. Jacobs	400
St. Mary's	3,886
St. Thomas	17,759
Stamford Twp.	4,000
Stratford	18,106
Strathroy	2,637
Streetsville	525
Tavistock	876
Thamesford	388
Thamesville	804
Thorndale	250
Tilbury	1,619
Tillsonburg	2,856
Toronto	499,278
Toronto Twp.	5,234
Townsend Twp.	2,988
Vaughan Twp.	4,184
Walkerville	6,279
Wallaceburg	4,067
Waterdown	791
Waterford	1,084
Waterloo	5,476
Waterloo Twp.	6,475
Watford	1,033
Welland	9,135
West Lorne	787
Wellesley	583
Weston	2,570
Windsor	31,629
Woodbridge	587
Woodstock	10,126
Wyoming	503
York Twp.	44,232
Zurich	457
Total—1,191,736	

SEVERN SYSTEM

Alliston	1,264
Barrie	6,775
Beeton	571
Bradford	885
Camp Borden	.....
Coldwater	595
Collingwood	7,262
Cookstown	635
Creemore	612
Elmvale	600
Midland	6,532
Orillia	7,854
Penetang	3,811
Port McNicoll	531
Stayner	915
Thornton	200
Tottenham	469
Victoria Harbor	1,441
Waubaushene	600
Total	**41,552**

WASDELL'S SYSTEM

Beaverton	949
Brechin	225
Brock Twp.	2,795
Cannington	838
Eldon Twp.	2,047
Gamebridge	70
Kirkfield	138
Mara Twp.	2,000
Sunderland	570
Thorah Twp.	1,084
Woodville	434
Total	**11,150**

NIPISSING SYSTEM

Callander	650
Nipissing	100
North Bay	10,163
Powassan	510
Total	**11,423**

MUSKOKA SYSTEM

Gravenhurst	1,437
Huntsville	2,160
Total	**3,597**

EUGENIA SYSTEM

Alton	450
Artemesia Twp.	2,367
Arthur	1,172
Chatsworth	303
Chesley	1,741
Derby Twp.	1,507
Dundalk	700
Durham	1,520
Elmwood	350
Flesherton	410
Grand Valley	582
Hanover	2,724
Holstein	285
Horning's Mills	350
Kilsyth	.....
Kincardine	1,992
Lucknow	902
Markdale	869
Mount Forest	1,838
Neustadt	430
Orangeville	2,186
Owen Sound	12,218
Priceville	.....
Ripley	.....
Shelburne	1,063
Tara	520
Teeswater	852
Wingham	2,240
Total	**39,571**

OTTAWA SYSTEM

Ottawa	107,732

THUNDER BAY SYSTEM

Port Arthur	15,094

CENTRAL ONTARIO SYSTEM

Belleville	12,240
Bloomfield	600
Bowmanville	3,259
Brighton	1,376
Camden East Twp.	3,050
Cobourg	4,874
Colborne	869
Darlington Twp.	3,407
Deloro	259
Deseronto	2,017
Havelock	1,220
Kingston	23,261
Lakefield	1,133
Lindsay	7,841
Madoc	1,056
Marmora	856
Millbrook	740
Napanee	2,863
Newcastle	553
Newburgh	434
Norwood	698
Omemee	517
Orono	700
Oshawa	10,126
Peterborough	21,230
Pickering Twp.	4,382
Picton	3,165
Port Hope	4,394
Richmond Twp.	1,944
Seymour Twp.	2,506
Stirling	849
Trenton	5,736
Tweed	1,288
Wellington	853
Whitby	3,102
Whitby Twp.	1,734
Whitby E. Twp.	3,420
Total	**134,552**

ST. LAWRENCE SYSTEM

Alexandria	2,260
Apple Hill	.....
Brockville	9,326
Chesterville	949
Lancaster	593
Martintown	.....
Maxville	753
Prescott	2,774
Williamsburg	200
Winchester	1,019
Winchester Springs	.....
Total	**15,660**

RIDEAU SYSTEM

Carleton Place	3,786
Kemptville	1,179
Lanark	583
Perth	4,047
Smith's Falls	6,665
Total	**16,260**

ESSEX COUNTY SYSTEM

Amherstburg	2,170
Canard River	50
Cottam	333
Essex	1,753
Harrow	619
Kingsville	1,732
Leamington	4,360
Total	**11,017**

THOROLD SYSTEM

Thorold	5,012

THE aim of The Bulletin is to provide municipalities with a source of information regarding the activities of the Commission; to provide a medium through which matters of common interest may be discussed, and to promote a spirit of co-operation between Hydro Municipalities.